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2,720,847

BOGIES FOR RAILWAY CARS

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2 Sheets-Sheet 1

Fig. 1

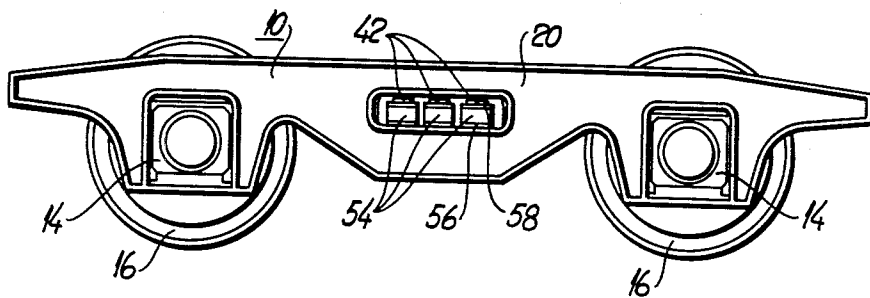
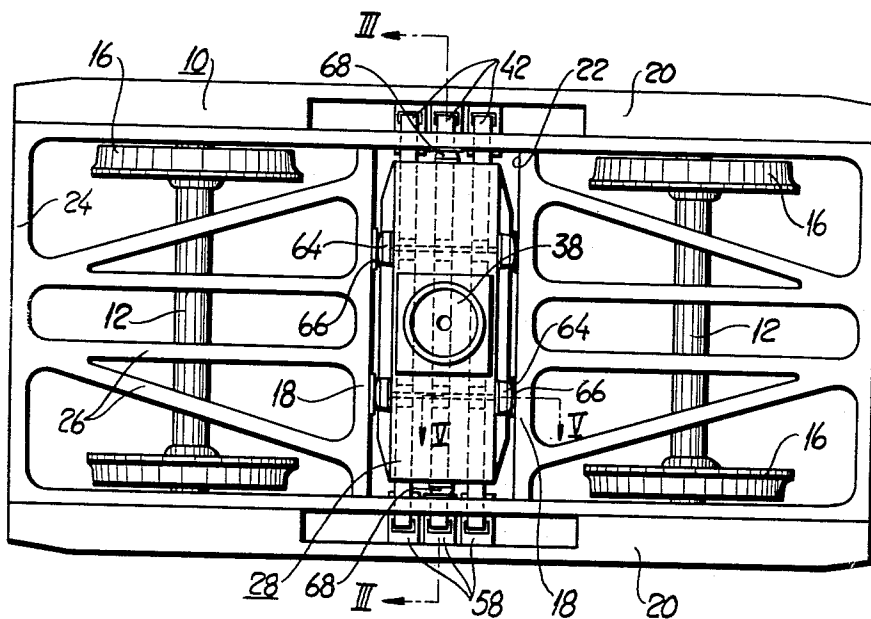


Fig. 2



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Fig. 3

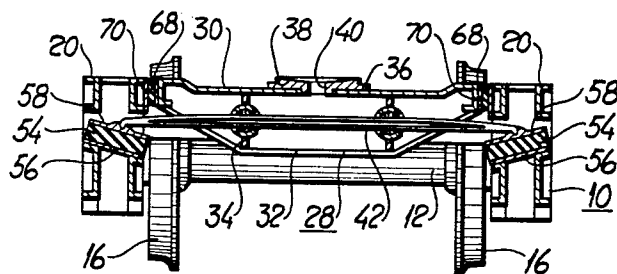


Fig. 4

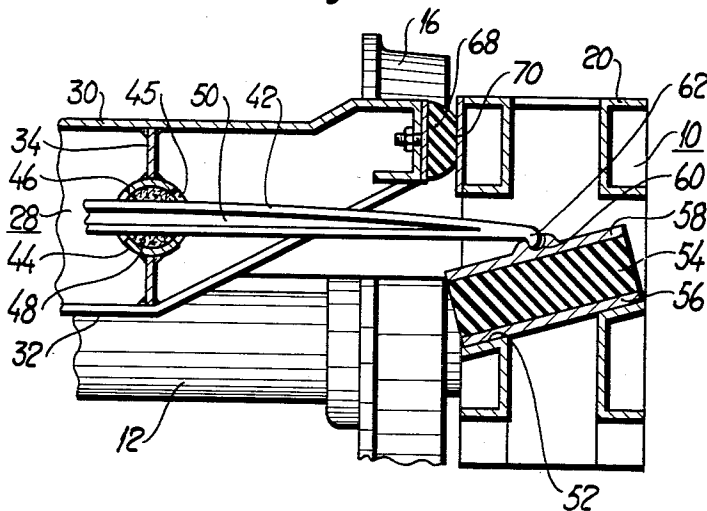
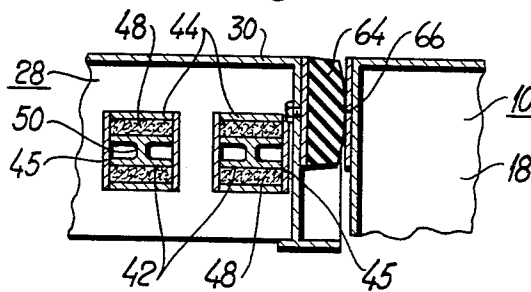


Fig. 5



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BOGIES FOR RAILWAY CARS

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7 Claims. (Cl. 105—193)

The present invention relates to bogies for cars, primarily for railway cars. More particularly the invention relates to bogies including a frame having spaced wheel and axle assemblies. In accordance with the invention, the frame is provided with a recess disposed between the wheel and axle assemblies and receiving a bolster which is resiliently supported in the frame by means of springs. The car body rests on the bolsters of two such bogies so as to permit pivotal movement about a vertical axis between the respective bogies and the car body.

It is the principal object of the invention to provide spring means for carrying the bolsters, which means are of relatively simple construction but which nevertheless are capable of ensuring very smooth riding of the car body. A further object is to provide a bogie which is capable of effectively damping the oscillations of the car body. Still another object is to provide a bogie, the bolster of which is adapted to absorb shocks and sound to a high degree so as to prevent the same from being transmitted to the car body.

Further objects and features of the invention will be apparent from the following description considered in connection with the accompanying drawings, which form a part of this specification, and of which:

Fig. 1 shows a lateral view of a bogie embodying the invention.

Fig. 2 is a top view of the bogie.

Fig. 3 is a sectional view taken on the line III—III of Fig. 2.

Fig. 4 shows a portion of the bogie in the same sectional view as Fig. 3 but on an enlarged scale; and

Fig. 5 is a sectional view taken on the line V—V of Fig. 2 and on an enlarged scale.

Referring now to the drawings, reference character 10 generally denotes the frame of the bogie and 12 two axially spaced axles which are journaled in bearings 14 and carry two pairs of wheels 16 adapted to run on tracks. The frame includes central transversely extending members 18 which together with the longitudinally extending members 20 of the frame form an opening 22 (Fig. 2 of rectangular shape and which may be connected to the lateral cross members 24 of the frame 10 by reinforcing members 26 in a known manner. Disposed in the opening 22 is a bolster 28 comprising a top plate 30, lateral plates 32 and cross plates 34 secured to the plates 30 and 32. A pad 36 having a concave upper surface 38 and a central bore 40 is secured to the top plate 30 and is adapted to support a corresponding pivot member on the car body to allow relative pivotal movement between the latter and the bogie in a horizontal plane.

A plurality of cantilever springs 42, in the present case three, extend transversely through the opening 22 and are mounted in the longitudinal frame members 20. The two cross plates 34, which are spaced at equal distances from the middle of the bolster, as is best shown in Fig. 3, are provided with bearing journals 44 in the form of short tubes closed at their ends as at 45 and having openings 46 through which the springs 42 pass. Segments 48 of a

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bearing material, such as a composite of plastic or metal, are located in the interior of the journals 44 on both sides of the springs, said segments turning in the journals 44 when the springs are bent.

In the interior of the longitudinal frame members 20, preferably sloping inwardly, supports 52 are provided on which rest resilient cushion members 54, such as of rubber or like material, disposed between and secured to plates 56 and 58 by an adhesive in known manner. The upper plate 58 has a recess 60, which is engaged by the end of the spring 42, the latter being bent downwardly, as at 62, so as to determine the lateral relative position between the spring and the cushion member 54.

The springs may be of the laminated leaf type generally used in cars, but as such springs, on account of friction between the leaves, have a variable spring characteristic, single blade springs are preferred, which for obtaining easy spring action and smooth riding of the car body preferably have a rectangular, or I, or like cross section, the height of which decreases towards the ends of the springs. In the embodiment illustrated this form is obtained by progressively reducing the height of the central web 50 of the spring.

Secured to the end faces of the bolster 28 are resilient members 68, such as of rubber, adapted to bear against vertical plates 70 on the longitudinal frame members 20 so as yieldingly to support the bolster in horizontal direction laterally of the bogie and, if mounted with an initial pressure, also to damp the rocking and canting of the bolster and the car body thereon.

Moreover, members 64 of the same character are provided between the longitudinal lateral faces of the bolster 28. Said members are adapted to bear against vertical plates 66 and to support the bolster in horizontal direction, that is, the longitudinal direction of the bogie. By giving the cushion members an initial pressure the friction between the cushions and the plates 66 contributes to damp oscillation of the bolster and the car body thereon.

The springs 42, carrying at least substantially the weight of the bolster and the car body thereon, ensure for the car, particularly if they are of the described single blade type, a smooth vertical riding action. The rubber members 54 and 68 additionally act to allow a resilient movement of the bolster and springs laterally of the bogie as well as to prevent noise and vibrations from being transmitted through the bolster to the car body. The cushion members 68, and additionally the members 64, if they are under initial pressure, provide friction against the bearing plates 70, 66, respectively, whereby the oscillations from the wheel and axle assemblies and the bogie frame are damped to a considerable extent, as the car rolls over the inequalities of the track. Moreover, the members 68 effectively absorb shocks which may occur, such as when the car passes curves or the like and the bolster is moved laterally of the bogie by the centrifugal force acting on the car body. When the car body tends to take an inclined position on the curve, for instance, the initial pressure between the member 68 and the plate 70 is increased, as is also the friction between the same, whereby the canting of the car body is reduced. In case the vertical oscillations of the car body are so small that the members 64 and 68 do not slide on the plates 66, 70 the internal friction of the material of said members acts to damp such small oscillations.

While one more or less specific embodiment of the invention has been shown, it is to be understood that the same is for purpose of illustration only, and that the invention is not limited thereby, but its scope is to be determined by the appended claims.

What I claim is:

1. In a bogie, the combination with a frame having spaced longitudinal members and spaced transverse mem-

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bers, of a bolster and means for supporting the bolster in the frame comprising at least one transverse spring, resilient yieldable supports on said longitudinal members operatively engaged by the ends of said spring to support the same, and two intermediate supports carried by said bolster and engaged by said spring intermediate the ends thereof to support the bolster, said intermediate supports being spaced approximately equidistantly from the longitudinal center line of the frame and the portion of the spring between the spaced intermediate supports being free to flex in a direction substantially perpendicular to the longitudinal center line of the spring.

2. A structure as defined in claim 1 in which said yieldable supports comprise pads of resilient non-metallic material.

3. A structure as defined in claim 2 in which said pads are inclined downwardly in a direction toward the central vertical longitudinal plane of the frame.

4. A structure as defined in claim 1 in which said two intermediate supports comprise journal bearings permitting pivotal movement of the spring relative to the bolster upon flexure of the spring.

5. A structure as defined in claim 4 in which said

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spring comprises a one-piece member of progressively diminishing vertical cross section toward its ends.

6. A structure as defined in claim 5 in which the spring is of I-beam cross section.

7. A structure as set forth in claim 1 including pads of resilient non-metallic material located between the longitudinal members of the frame and adjacent portions of the bolster, said pads being initially compressed when the parts are assembled.

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